

Moon Rabbit Phaser

drolo 2018



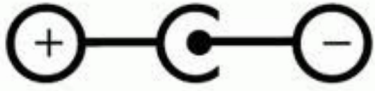
The Moon Rabbit is a 6 stage optical phaser with tap tempo and an envelope follower.

The 6 analog phase stages are voiced halfway between a Uni-Vibe type pedal (staggered phase filter caps) and a more traditional phaser (identical phase filter caps).

It has 8 available LFO shapes and an expression pedal input that can be assigned to control the rate or the range of the phasing.

Connecting and powering:

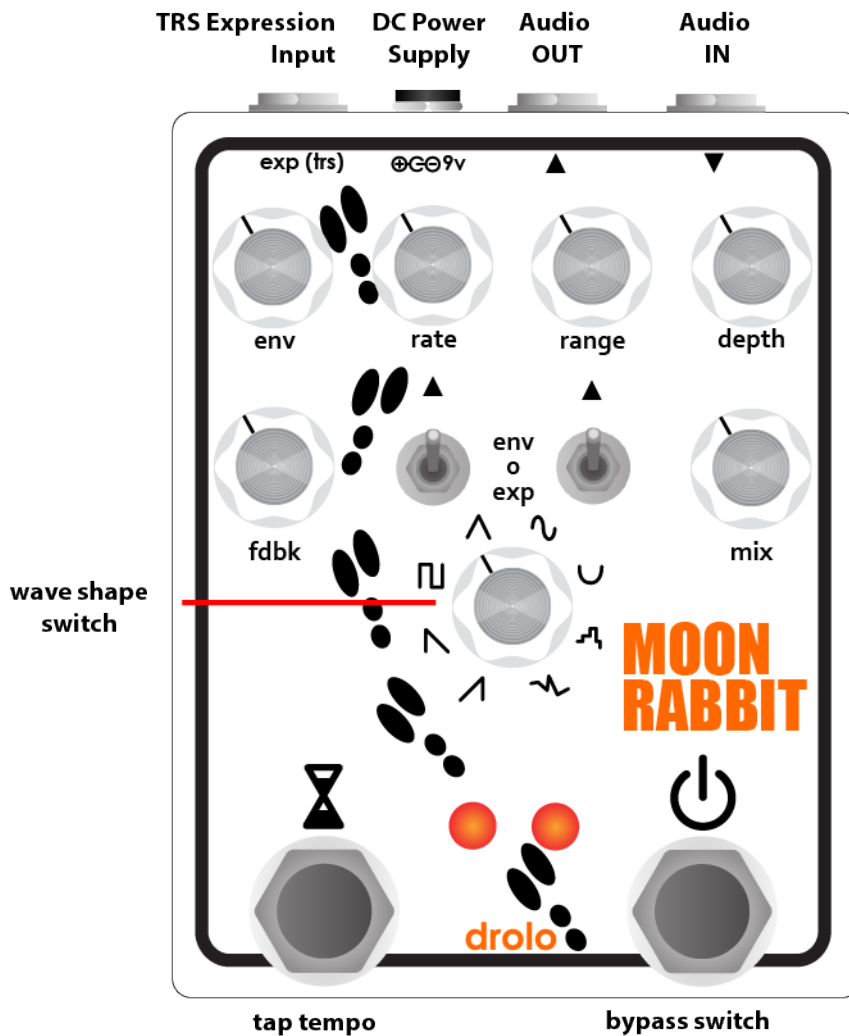
The power supply needs to be 9V/100ma center negative like the common BOSS power supplies:



Make sure the polarity of your power supply is correct or it will damage the pedal. Do NOT run at higher voltages.

Since the pedal has a digital microprocessor operating with high frequencies, you might hear some high pitched noise if you use it together on the same power supply with other pedals (daisy chained) even when it is off. The noise can bleed through the power supply into the other pedal's signal. This is normal for such devices. It might not be the case in your particular setup but if you notice that, I would suggest using an isolated power supply for the tremolo.

Controls:



- bypass** The pedal uses a relay bypass. If you give the bypass switch a short tap (<0.3 sec) it acts in latching mode. If you press it for more than 0.3 seconds, the bypass led will start flashing to indicate that you are in momentary mode. When you release the switch the pedal goes back to bypass mode.
- tap tempo** Tap in the desired tempo for the LFO modulation.
- wave shape** Selects one of the 8 available modulation wave shapes for the LFO:
ramp up, ramp down, square, triangle, sine, hypertriangle, random steps, random slopes
- env** Allows you to adjust the sensitivity of the envelope follower to the level of the input signal. The follower converts the input signal into a control voltage that can be used to affect the rate or the range parameters. Like with an auto-wah, the louder you play the higher the control voltage.
- rate** Sets the speed of the modulation. The max speed range will give you ring modulator type sounds.
- range** Shifts the range of the modulation between its max and minimum points
The range pot can only be effective if depth is less than maximum.
If depth turned fully down, range can be used as a manual phase shift control.
If you are using the envelope follower to control the range, you can fine tune the sweep with the range knob to find the sweet spots that sound best.
- depth** Sets the depth of the modulation. (the width of the LFO wave)
- fdbk** Feedback (regeneration) sets the amount of phased signal that gets reinjected into the phaser for a more intense resonant effect. At the max setting it makes the phaser oscillate. The volume of the oscillation is limited by clipping diodes to overdrive more pleasingly and also avoid any hearing/material damage **but watch out anyway :)**
- mix** Dials in the mix between wet (CW) and dry (CCW) signals

env/0/exp

These 2 toggle switches define how the envelope follower and expression input are controlling rate and range respectively (follow the little black arrow to see what switch controls what parameter)

- Set to **0**, only the respective knob is active. Exp and envelope have no effect on the given parameter.
- Set to **exp**, the parameter will be controlled by the expression input. In this scenario the actual knob (rate or range) serves to scale the range of the expression input. (setting its maximum value)
- Set to **env**, the chosen parameter will receive the signal from the envelope follower. Again here, the actual knob serves to scale the effect of the envelope signal. (setting its maximum value)

EXP input

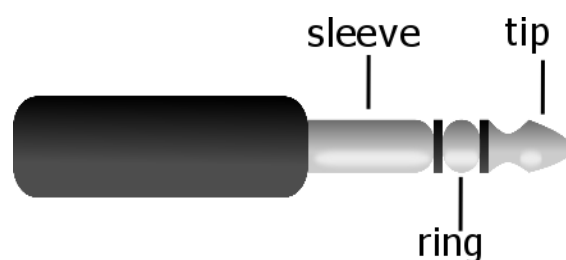
Can be used to externally control the rate or range. When an expression pedal is connected, the rate pot can be used to define the max setting of the expression pedal.

Most commercially available expression pedals based on a potentiometer and using a TRS plug should work. The value is not really critical, although I would not go lower than 10k.

Some examples are the Moog EP-2, Roland EV-5, and M-Audio EX-P.

You need to use **TRS (Stereo)** plugs and cables. **NO MONO PLUGS OR CABLES!** These will short out the voltage regulators inside the pedal and damage it.

Here is how such a TRS plug looks like.



The exp jack is connected to the pedal like this:

sleeve : ground

ring: 5V supply voltage

tip: controlling (varying) pin

If you really know what you are doing you can actually use a control voltage instead of a resistance based controller. But you need to consider the connections and never exceed 5V. If you do you might damage the pedal. **Use a TRS plug. No Mono plug. TRS, NOT mono :)**

If you have any doubt when deciding what to connect to the expression input please send me an email and I will verify that everything is safe.

Some notes:

This phaser has quite a large range of settings that allow you to dial in very common phaser sounds but also a lot of weird sounds, “bad” sounds and even silence.

A lot of the controls are interactive, especially if you introduce the envelope follower where the input signal will also dictate how the pedal behaves.

It may take a bit of experimenting and exploring to get a grasp of how everything works but I’ll try to give you some pointers.

Let’s try to better understand the interaction between range and depth:

Let’s start off with a “basic” phaser sound: set the env/0/exp switches to their middle (0) position. Select the sine wave for the LFO and set every other knob at noon.

Depth will define how wide the LFO wave will sweep and **range** defines where the middle point of that wave will sit.

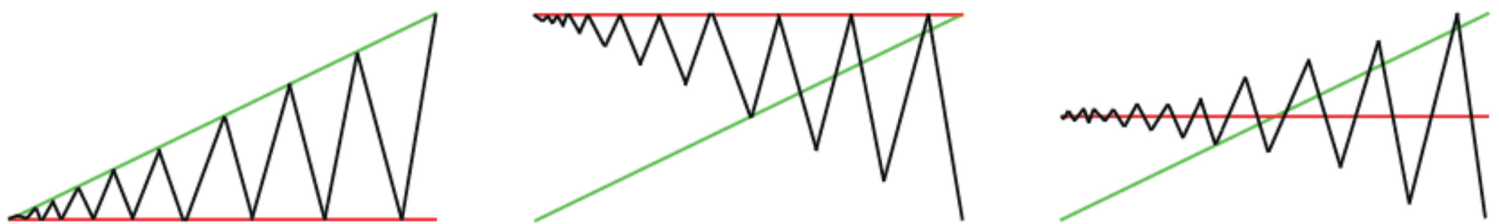
Start by turning the range knob in each direction to get a feel of how it affects the sweep of the LFO and the resulting sound.

Now do the same with the depth knob. You will notice that if depth is at max, range has no effect.

Let’s try the following: Set both range and depth at max and slowly start to turn down depth. You will notice that as you dial it back the sweep stays in the upper frequencies but does not go as low. Conventionally most common phaser sounds will be in the upper frequency ranges.

You can do the same but starting with the range knob at minimum. Here you will see that as you dial back the depth the sweep goes lower and lower. There is a portion of the lower frequencies where the sweep is barely audible. Usually to get a more “classic” phaser sound you will try to set your range to be just above that portion to have a more even sweep. But this characteristic can also be put to good use for more unconventional or rhythmic sounds.

Here is a crude representation of what I am trying to explain :) :



The red line represents the setting of the range knob. The green line represents the increasing of the depth and the black line is the resulting LFO wave.

Now let's try out the envelope follower for the rate:

With all knobs at noon like previously, let's flip up the left toggle switch to the env position.

You should notice that when you strum your guitar harder the rate increases. You can use the rate knob to define the highest rate that it can jump to and use the env knob to find the sweet spot to suit your incoming signal.

Now try the envelope for the range:

Turn the depth all the way down, leave range at noon for now and flip up the right toggle switch to the env position.

Start with the env at noon and try to find the position of the range knob that sounds the best.

You will see that the phasing LED follows the envelope follower's signal. You can also add some LFO to the envelope signal. Both will be added together to create the final wave. Usually you will need to turn the range knob down a bit otherwise the sweep will be sitting in the higher frequencies only.

Once you have mastered the use of the envelope controlling range and rate individually you can now try to control them both at the same time ;-)

A couple more tips and tricks:

- If you dial back fdbk completely and turn mix completely CW to wet only the phaser essentially becomes a vibrato as without mixing some dry signal there is no phasing effect.
- Now if you increase fdbk while still leaving mix at at full wet you will get more filter-like sounds. If you combine that with using just the envelope follower controlling the range and depth turned down it sounds a lot like an auto-wah. You can use the range and env knobs to find the sweet spot of the sweep.
- If you turn down depth, you can sweep the range of the phaser with an expression pedal and have it work a bit like a wah.

Hope you will enjoy this pedal and create magnificent noise!!

Thanks!

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